Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

HAZARDOUS WASTE INCINERATORS
AGENCY INTEREST NO. 87883
HEXION SPECIALTY CHEMICALS INC.
NORCO, ST. CHARLES PARISH, LOUISIANA
Activity Numbers: PER20020001
Draft Permits No. 2252-V1

I. APPLICANT:

Company:
Hexion Specialty Chemicals Inc.
16122 River Road, Norco, LA 70079

Facility:
Norco Facility
Approximate Coordinates: Latitude 30 deg., 0 min., 8.66 sec. and Longitude 90 deg., 25 min., 24.64 sec. Zone 15.

Permit Writer:
Corbet Mathis
Office of Environmental Services, Permits Division

II. FACILITY AND CURRENT PERMIT STATUS AND PROPOSED PERMIT INFORMATION:

Hexion Specialty Chemicals Inc. is a newly formed company that purchased assets previously owned and operated by Shell Chemical Company in Norco, St. Charles Parish, Louisiana.

The Hexion Facility consists of several units including the Crude Epichlorohydrin Unit (C-Unit), Calcium Chloride ($CaCl_2$) Unit, the High Performance Resins Unit (HPRU), elevated flare, and two organic chloride incinerators.

The chemicals manufactured at the Norco Facility include: Allyl Chloride (AC), Crude Epichlorohydrin (ECH), Hydrochloric Acid (HCl) solution, $CaCl_2$ slurry, and epoxy resins and related products. Primary raw materials used include propylene, chlorine, caustic, and lime.

The two organic chloride incinerators, NCIN-1 and NCIN-2, generally operate at the same time. The incinerators have two distinct pollution control functions.

One of the functions of the incinerators is to combust liquids that are classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA). The general make up of the liquid wastes are volatile, richly chlorinated organics.

Operation of the incinerators while combusting liquid hazardous wastes is regulated under the Hazardous Waste Combustor MACT (40 CFR 63 Subpart EEE). Among other requirements, the incinerators must meet an organic constituent Destruction and Removal Efficiency (DRE) of 99.99%.

The second function of the incinerators is to combust vapor streams from process vents and tanks. Vapors from tank and process operations are composed of volatile chlorinated organics and inert nitrogen. Many of the process vent streams routed to the incinerators are regulated under the Hazardous Organic NESHAP (HON) [40 CFR 63 Subparts F, G, and H], and/or a New Source Performance Standard (NSPS) [40 CFR 60], which is subsumed by the HON.

A description of the organic chloride incinerator systems is as follows:

Combustion Chamber

The combustion chambers of each incinerator are identical. Feed is injected through six parallel atomization nozzles (with steam) into a single wide turndown ratio natural gas burner ignited by a premixed pilot burner. Steam injection into the firebox will be utilized to control combustion temperature. Process, loading, and tank vent gases are introduced into the combustion chamber through gas nozzles. The firebox (combustion chamber) of each incinerator is constructed of carbon steel lined with firebrick. The inside dimensions of each rectangular firebox are 9 ft.-5 in. high by 8 ft. – 5 in. wide by 30 ft. long. The resulting cross-sectional area is 70 ft^2. The total volume of each firebox is 2,378 ft^3. Startup and shutdown of the incinerator is fueled with natural gas.

Combustion chamber exit temperature is the primary control parameter. A thermocouple in the exit flue gas adjusts either the natural gas to the primary burner or the excess air to the firebox to control temperature above 1600 °F. Normally, the combustion chamber will operate at the minimum natural gas rate and temperature adjustments will be made by varying the amount of cooling air admitted to the firebox concentrically around the natural gas burner or by steam injection.

Continuous Emission Monitors (CEMS) monitor flue gas O_2, and CO concentration exiting the stack. By operating the incinerator with minimum excess oxygen and less than 100 ppmv CO in the flue gas, good combustion efficiency is assured.

Waste Heat Boiler

Flue gases exiting the combustion chamber enter a waste heat recovery boiler before entering acid recovery equipment. Acid recovery equipment is similar but not identical on the two incinerators.

NCIN-1 Acid Recovery

NCIN-1 acid recovery equipment consists of a quench chamber equipped with two (2) spray nozzles using scrubber bottoms acid and fresh makeup water to reduce flue gas temperature to approximately 185 °F. Flue gas exiting the quench chamber vents to an acid recovery scrubber equipped with two packed sections. The upper section is scrubbed with water and the bottom section uses recirculated scrubber bottoms acid as the scrubbing medium. A stream of acid is removed from the recirculation loop and pumped to storage.

Gases from the acid recovery scrubber flow to a packed caustic scrubber containing interlox saddles and using a circulating stream of caustic-sodium thiosulfate solution for HCL and Cl reduction. The scrubbing media is maintained basic with automatic pH control. Gases exit the final scrubber through a knock out pot before entering the induced draft fan.

The Induced Draft (ID) fan maintains the combustion zone and upstream combustion gas treatment components under vacuum. The ID fan also provides combustion air for the firing of auxiliary fuel introduced through the burners, steam atomized liquid wastes introduced through nozzles into the firebox, and vapor vents introduced through nozzles into the firebox.

Downstream of the ID fan of each system is a catalytic oxidation (CATOX) process that operates at positive pressure and is designed to control chlorinated PCDD/PCDF emissions.

NCIN-2 Acid Recovery

Flue gases exiting the waste heat boiler enter a quench chamber equipped with two (2) spray nozzles using scrubber bottoms acid and fresh makeup water to reduce flue gas temperature to a nominal 185 °F. Gases flow from the quench chamber to an acid absorber consisting of two packed sections. Gases are scrubbed by counter-current contact with fresh water in the upper section and recirculated bottoms acid in the lower section. A stream of recirculated hydrochloric acid is pumped to storage.

Scrubbed gases enter a packed caustic scrubber where they are scrubbed with a pH controlled caustic solution. Next, the scrubbed gases pass through a dehumidifier, which condenses the major portion of water vapor using a caustic solution and recycled caustic solution from the caustic scrubber. Gases leaving the dehumidifier flow through a knock out pot before entering the induced draft fan.

The Induced Draft (ID) fan maintains the combustion zone and upstream combustion gas treatment components under vacuum. The ID fan also provides combustion air for the firing of auxiliary fuel introduced through the burners, steam atomized liquid wastes introduced through nozzles into the firebox, and vapor vents introduced through nozzles into the firebox.

Downstream of the ID fan of each system is a catalytic oxidation (CATOX) process that operates at positive pressure and is designed to control chlorinated PCDD/PCDF emissions.

CATOX Systems

Combustion gas leaving the induced draft fan in each system enters a steam pre-heater to raise the gas temperature to an unsaturated condition and eliminate water droplets. The combustion gas then enters a plate-and-frame exchanger that heats the combustion gas by exchanging heat with the catalyst module exit gas (gas-to-gas interchanger). Following the heat exchanger in each system is a steam coil post-heater to heat the combustion gas to the catalyst module to a minimum operating temperature of 330 °F. The heated combustion gas enters the catalyst module where PCDD/PCDF oxidation takes place. After exiting the catalytic module and before entering the stack, the combustion gas is cooled to approximately 200 °F through the heat exchanger (the gas-to-gas interchanger previously described) to conserve steam usage.

Although the combustion zones and the CATOX catalyst weights of both incinerators are identical, NCIN-2 operates at a combustion gas flow approximately 20% less than the NCIN-1 flow.

Emergency Bypass Scrubber

An infrequent mode of operation deals with a total trip of one or both of the incineration systems. In such an instance, the Automatic Waste Feed Cutoff (AWFCO) is actuated and liquid waste feeds to the incinerator are immediately halted. During periods of incineration shutdown, an Emergency Bypass Scrubber is used as a secondary control mechanism to manage the vent streams. This scrubber is only utilized when both incinerators are down. If only one incinerator trips while the other incinerator continues to operate, then the vents that were being routed to the incinerator that trips are immediately diverted to the operating incinerator. During an incinerator trip when only one incinerator is operating, or when both incinerators trip simultaneously, vents are bypassed from the incinerator(s) to this scrubber until one of the incinerators can be restarted can be restarted. The bypass scrubber uses a water scrubbing solution, which is intended to primarily control HCl emissions. The Emergency Bypass Scrubber has not been previously listed as a source in the Title V permit because it operates so infrequently. This scrubber will be permitted to operate a maximum of 10 hr/yr.

Hexion Specialty proposes to make the following changes:

1. Incorporate 40 CFR 63 Subpart EEE - Hazardous Waste Combustion MACT requirements.

2. Incorporate Comprehensive Performance Test (CPT) results.

3. Incorporate projects approved by Authorizations to Construct.

4. Add the Incinerator Area Wastewater Fugitive Emissions, Emission Point No. 197.

5. Add the Emergency Bypass Scrubber, Emission Point No. 198.

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. Air Toxic Compliance Plan No. CC 92004 was approved on March 20, 1995 by LADEQ. Under the consolidated fugitive emission program the facility shall comply with the requirements of 40 CFR 63, Subpart H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks.

Several permits addressing portions of the facility have already been issued. These include:

Permit #	Units or Sources	Date Issued
2869-V2	C-Unit	4/3/2006
2252-V0	Hazardous Waste Incinerators	4/11/1997
2914-V0	Utilities Unit	3/10/2005
2764-V1	Flare	3/21/2003

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	19.88	13.67	- 6.21
SO_2	0.02	0.28	+ 0.26
NO_X	39.16	27.86	- 11.30
CO	30.84	46.74	+15.90
VOC*	15.18	21.60	+ 6.42

*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs) in tons per year:

Pollutant	Before	After	Change
1,2-Dichloroethane	<0.01	0.001	+0.001
1,2-Dichloropropane	1.95	2.001	+0.051
1,3-Butadiene	-	<0.001	-
1,3-Dichloropropene	3.69	3.325	-0.365

*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs) in tons per year:

Pollutant	Before	After	Change
1,4-Dioxane	-	<0.001	-
4,4'-Methylenebisbenzeneamine	-	0.105	+0.105
Acrolein	-	0.020	+0.020
Acrylic Acid	-	<0.001	-
Acrylonitrile	-	<0.001	-
Allyl chloride	1.00	2.875	+1.875
Benzene	<0.01	0.013	+0.013
Bromoform	-	0.040	+0.040
Carbon disulfide	-	<0.001	-
Carbon tetrachloride	-	0.008	+0.008
Chlorinated dibenzo-p-dioxins	<0.001	<0.001	-
Chlorinated dibenzofurans	<0.001	<0.001	-
Chlorobenzene	-	0.016	+0.016
Chloroethane	-	0.086	+0.086
Chloroform	-	0.024	+0.024
Cresol	-	0.099	+0.099
Epichlorohydrin	3.11	0.411	-2.699
Ethyl benzene	-	0.013	+0.013
Ethylene glycol	-	0.068	+0.068
Formaldehyde	-	0.032	+0.032
Glycol ethers	-	0.022	+0.022
Hydrogen cyanide	-	<0.001	-
Hydroquinone	-	<0.001	-
Methanol	-	<0.001	-
Methyl chloride	-	0.006	+0.006
Methyl ethyl ketone	0.02	0.061	+0.041
Methyl isobutyl ketone	<0.01	0.046	+0.046
Phenol	-	0.099	+0.099
Styrene	-	0.003	+0.003
Tetrachloroethylene	-	0.002	+0.002
Toluene	<0.01	0.261	+0.261

*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs) in tons per year:

Pollutant	Before	After	Change
Triethyl amine	-	<0.001	-
Xylene	<0.01	0.040	+0.040
n-Hexane	-	0.012	+0.012
n-butyl alcohol	-	0.081	+0.081
Total	9.77	9.770	-

NON-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Antimony	1.64	0.048	-1.592
Arsenic	0.02	0.021	+0.001
Barium	0.32	0.338	+0.018
Beryllium	0.02	0.032	+0.012
Cadmium	0.04	0.016	-0.024
Chlorine	63.38	16.028	-47.352
Chromium	0.004	0.016	+0.012
Cobalt	-	<0.001	-
Copper	0.08	0.024	-0.056
Dichloromethane	-	0.022	+0.022
Hydrochloric acid	4.16	32.240	+28.08
Lead	-	0.029	+0.029
Manganese	0.04	0.077	+0.037
Mercury	0.02	0.052	+0.032
Nickel	0.20	0.065	-0.135
Selenium	0.16	0.005	-0.155
Zinc	0.34	0.101	-0.239
Total Non-VOC TAPs	70.424	49.112	-21.312

Prevention of Significant Deterioration Applicability

Prevention of Significant Deterioration (PSD) review is not required as the emissions increases are less than the significance threshold for all criteria pollutants.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Part 70 Permit No. 2252-V1.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Part 70 Permit No. 2252-V1

III. Permit Shields

No permit shields are being granted at this time.

IV. Periodic Monitoring

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. Air Toxic Compliance Plan No. CC 92004 was approved on March 20, 1995 by LADEQ. Under the consolidated fugitive emission program the facility shall comply with the requirements of 40 CFR 63, Subpart H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks. Monitoring is required as per 40 CFR 63, Subpart FFF – National Emission Standards for Hazardous Air Pollutant from Hazardous Waste Combustors and 40 CFR 63, Subpart G – HON.

V. Applicability and Exemptions of Selected Subject Items
See Table 2 of Permit No. 2252-V1

VI. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Hazardous Waste Incinerators	40 CFR 63, Subpart H, SOCMI HON MACT	≥ 5% organic HAP	40 CFR 63 Subpart H SOCMI HON MACT
	40 CFR 61, Subpart V NESHAP for Equipment Leaks	≥ 10% VHAP	
	40 CFR 60, Subpart VV NSPS for Equipment Leaks	≥ 10% VOC	
	LAC 33:III.2121, Louisiana Fugitive Emission Control	≥ 10% VOC	

VII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit

containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Selective Catlaytic Reduction (SCR) – A noncombustion control technology that destroys NO_X by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_X into molecular nitrogen and water.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3).

Title V permit – See Part 70 Operating Permit.

"Top Down" approach – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

Turbine – A rotary engine in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.